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forestry report

No. 32 (March 1987) Northern Forestry Centre Edmonton, Alberta

Manitoba's forests

The forest is Canada's most valuable renewable natural resource, and the benefits provided by the forests to the people of Manitoba are numerous.

Some benefits are intangible and difficult to assess, such as protecting agriculture crops, regulating water flow, controlling erosion, producing oxygen, providing food and shelter for wildlife, and creating a pleasing environment for recreational activities by hikers, fishermen, campers, and nature lovers.

Other benefits, such as timber production, are tangible and can be measured in terms of the various goods and services they contribute to the makeup of the forest industry in Manitoba.

The tables and facts presented on the following pages attempt to show the most significant characteristics of the Manitoba forest scene. Emphasis is on the forest industry and the forest land base from which the trees are harvested.

Information presented here is based on data collected in 1984–85.

Spruce seedlings in shade house at Clearwater Provincial Forest Nursery, The Pas.

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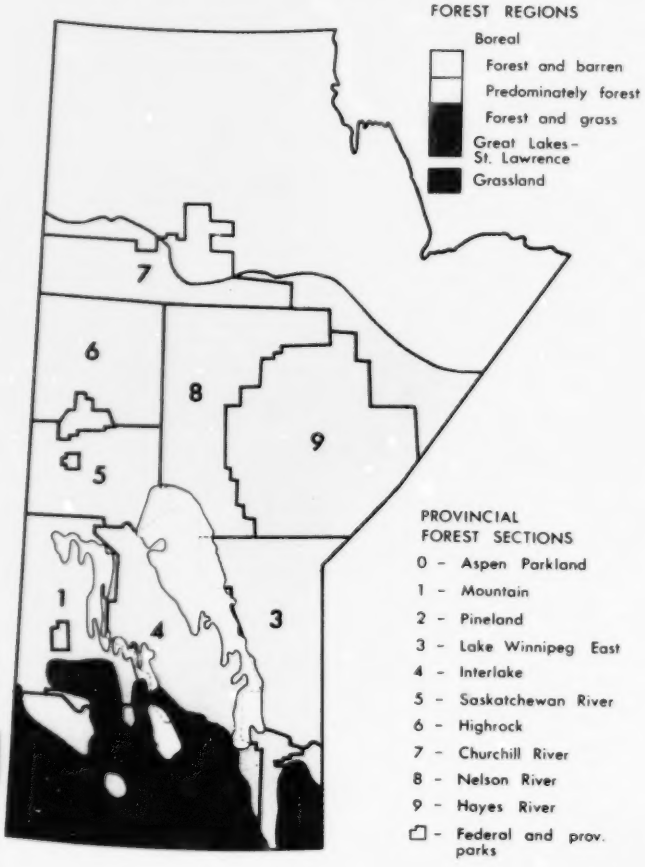
Conversion factors

Metric		Imperial
1 centimetre (cm)	=	0.3937 inch (in.)
1 metre (m)	=	3.2808 feet (ft)
1 hectare (ha)	=	2.47 acres
1 square kilometre (km^2)	=	0.3861 square miles (mi^2)
1 tonne (t)	=	1.1023 tons (T)
1 t (wood chips)	=	0.9167 bone dry units (BDU)
1.180 m^2 sheet product (1-mm basis)	=	1 ft^2 (1/2-in. basis)
1 cubic metre (m^3) roundwood	=	35.3147 cubic feet (ft^3) roundwood
1 m^3 processed lumber (solid wood)	=	616 board feet (foot board measure, fbm) processed lumber

M = 1 000, MM = 1 000 000

Forest regions of Manitoba

Jack pine stand, Pineland Forest Section.



Source: Rowe 1972

Planted white spruce seedlings.

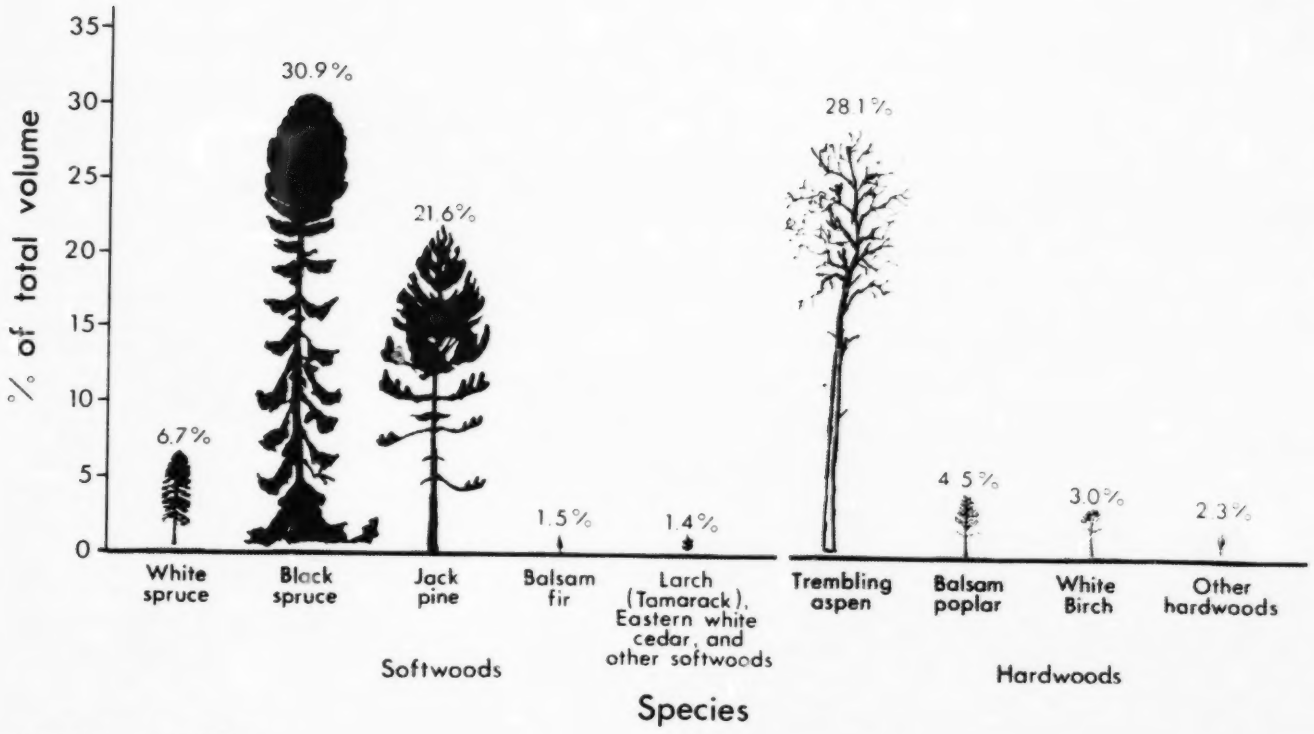
Area classification

	Manitoba '000 km²	%	Canada '000 km²	%
Land classification				
Forested[a]—Productive	149	—	2 641	—
—Unproductive	185	—	1 723	—
—Total	334	51	4 364	44
Agriculture	59	9	672	7
Urban and cleared	7	2	34	—[b]
Other[c]	146	22	4 097	41
Total land	546	84	9 167	92
Total water	104	16	755	8
Total area	650	100	9 922	100

a Includes inventoried forest land, with forest defined as land primarily intended for growing or currently supporting forest.
b Less than 1%.
c Primarily wild land that includes tundra, alpines, and barrens and is generally uninfluenced by human activity.

Sources: The Canadian Forestry Service and Manitoba Natural Resources.

Volume of forest growing stock by species[a]



a Total volume: 745 625 000 m³.

Source: Manitoba Natural Resources.

Stocked, productive, and nonreserved forest land by ownership

Ownership	Manitoba '000 km²	Manitoba %	Canada '000 km²	Canada %
Provincial crown	114	89	1 549	81
Federal crown[a]	3	3	197	10
Private	10	7	164	9
Municipal	1	1	1	—[b]
Total	128	100	1 911	100

[a] This group includes Indian reserve lands.
[b] Less than 1%.

Sources: The Canadian Forestry Service and Manitoba Natural Resources.

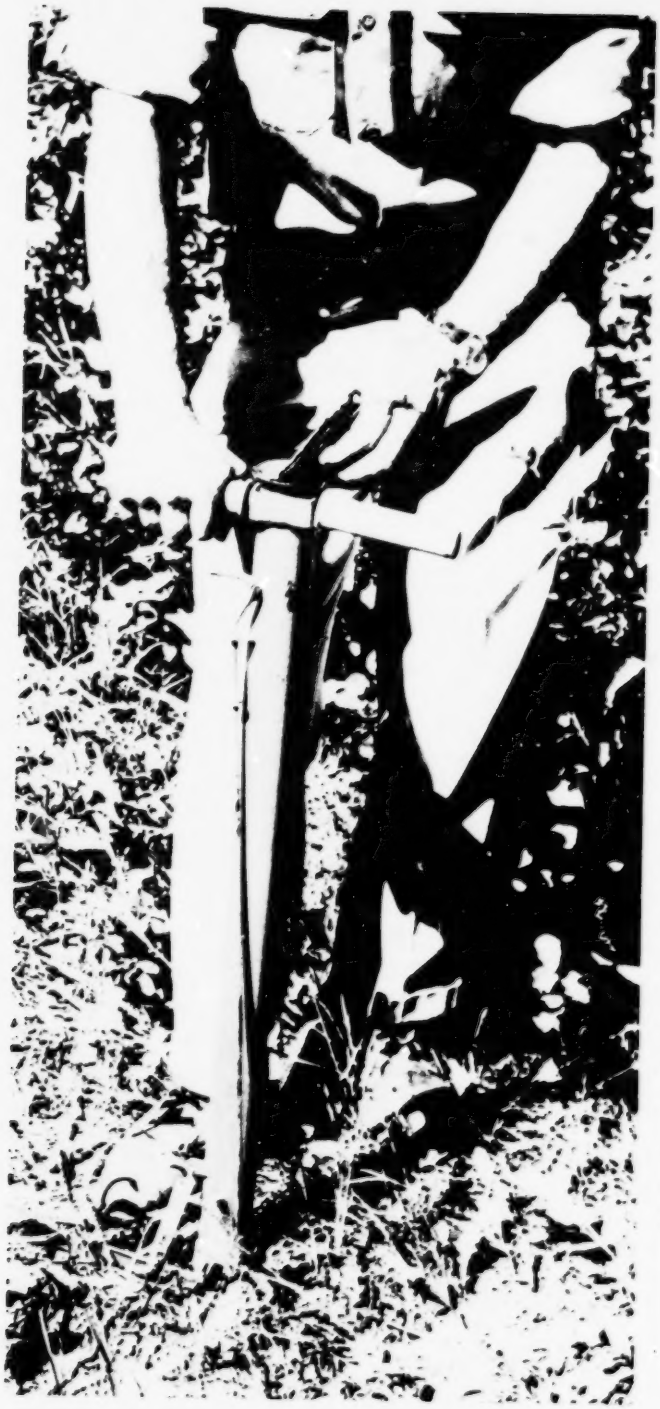
Annual allowable cut

The annual allowable cut from Manitoba's forests is equal to the annual growth, assuming that cutovers fully regenerate immediately after harvesting. The intent is to utilize this annual increment and still maintain the current level of growing stock. This is similar to spending the interest earned from a bank deposit without reducing the principal.

As the level of intensive forest management (e.g., stand tending practices such as thinning and fertilizing) increases in Manitoba, there will be an increase in the growing stock and a corresponding increase in the annual allowable cut. On the other hand, significant forest losses due to fire, insects, and diseases or the allocation of forest lands for other single-purpose uses such as agriculture and parks can reduce the annual allowable cut.

Manitoba is in the enviable position of having a surplus of timber; however, some of this timber is located in remote areas and at present is not available to be harvested economically. Currently only 27% of the softwood and 7% of the hardwood annual allowable cuts are utilized.

Thinning jack pine in Duck Mountains.



Pottiputki—a tool for planting containerized seedlings.

Silviculture

Silviculture is the science and art of growing and tending a forest crop. It is comparable to agronomy in agriculture, since both are concerned with the technical details of crop production. Silviculture is directed at the creation and maintenance of the kind of forest that will best fulfill the biological and economical objectives of the owner—the people of Manitoba.

Silvicultural activities 1985

Activity	Area (ha)
Reforestation—Planting (9.5 million trees)	4 364
—Seeding	1
—Site preparation for natural regeneration	1 705
—Net reforested	6 070
Stand tending	3 725
Area site prepared for future planting	4 999
Total treated	14 794
Total harvested	20 000[a]

[a] Estimate.

Source: Manitoba Natural Resources.

Primary forest products

Product	Production[a]
Lumber[b,c] (dimension, boards, and timbers)—m^3	247 436
Treated products	
Lumber[c]—m^3	7 872
Posts, poles, and rails[d]—m^3	22 612
Miscellaneous wood products (ties and house logs[c])—m^3	3 679
Fuelwood[d]—m^3	103 593
Logs and pulpwood[d]—m^3	278 583
Wood chips—t	82 448
Insulation and fiberboard sheathing (1 mm basis)—'000 m^2	25 519
Newsprint—t	165 000
Kraft pulp and paper—t	107 400
Paper and roofing products—t	9 070

[a] Total roundwood harvested in 1984–85 was 1 673 031 m^3.

[b] Included in this value is independent planing mills production of 62 486 m^3, which includes rough lumber produced by the sawmill industry.

[c] Processed lumber; volume based on the actual size of the sawn product (i.e., 3.8 × 8.9 cm or 1½ × 3½ in.) and not on the nominal size (i.e., 5.1 × 10.2 cm or 2 × 4 in.). The conversion factor used is 1 m^3 of processed lumber is equal to 616 board feet (fbm) of processed lumber.

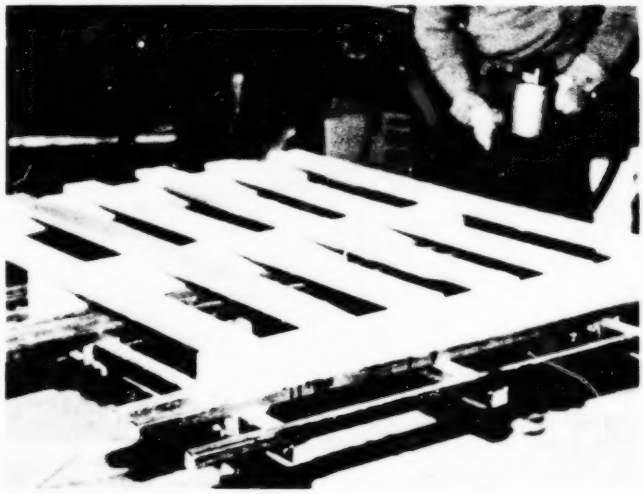
[d] Refers to volume of roundwood. The conversion factor used is 1 m^3 is equal to 35.315 cu. ft.

Sources: The Canadian Forestry Service and Manitoba Natural Resources.

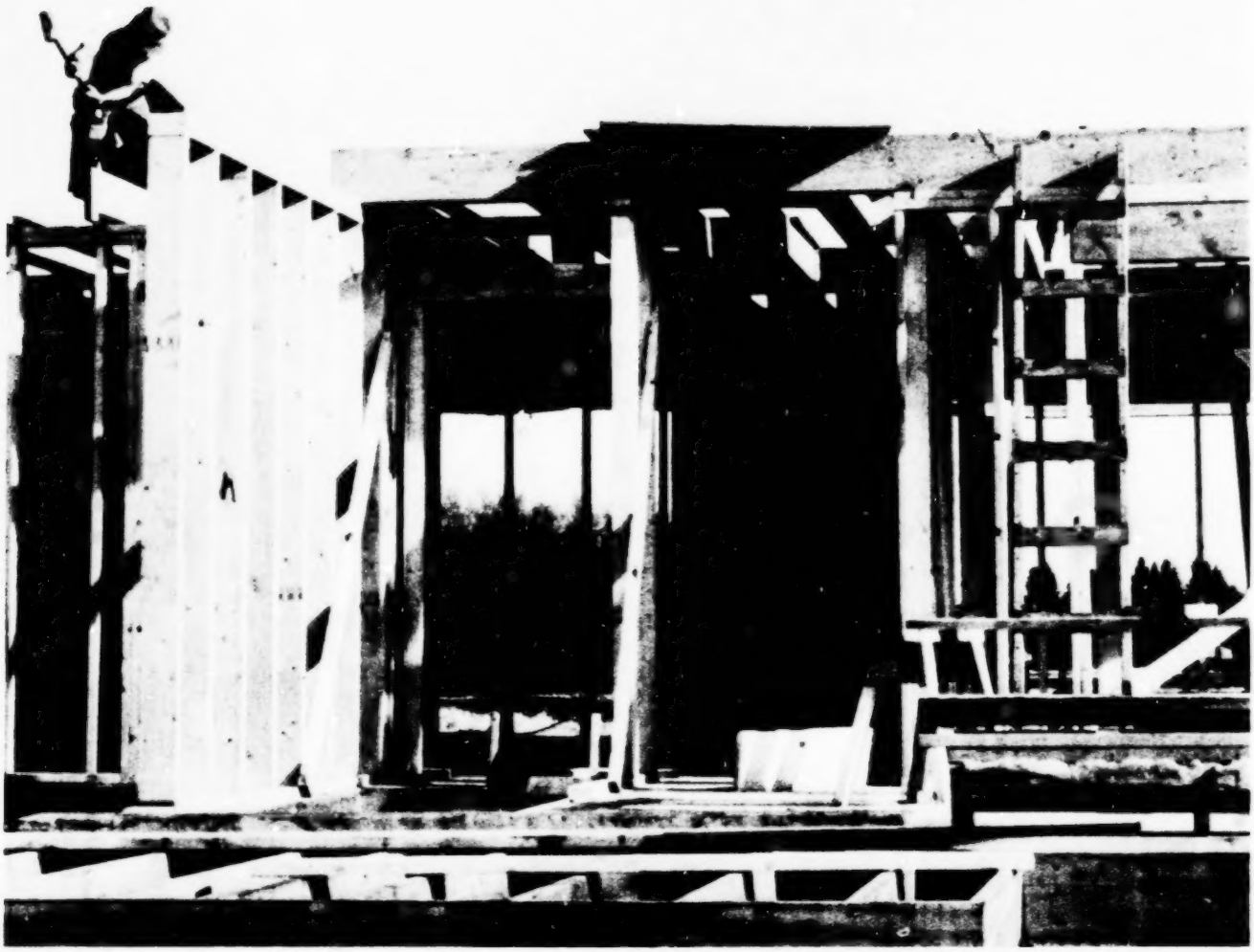
Principal uses of Manitoba's tree species

Softwood species

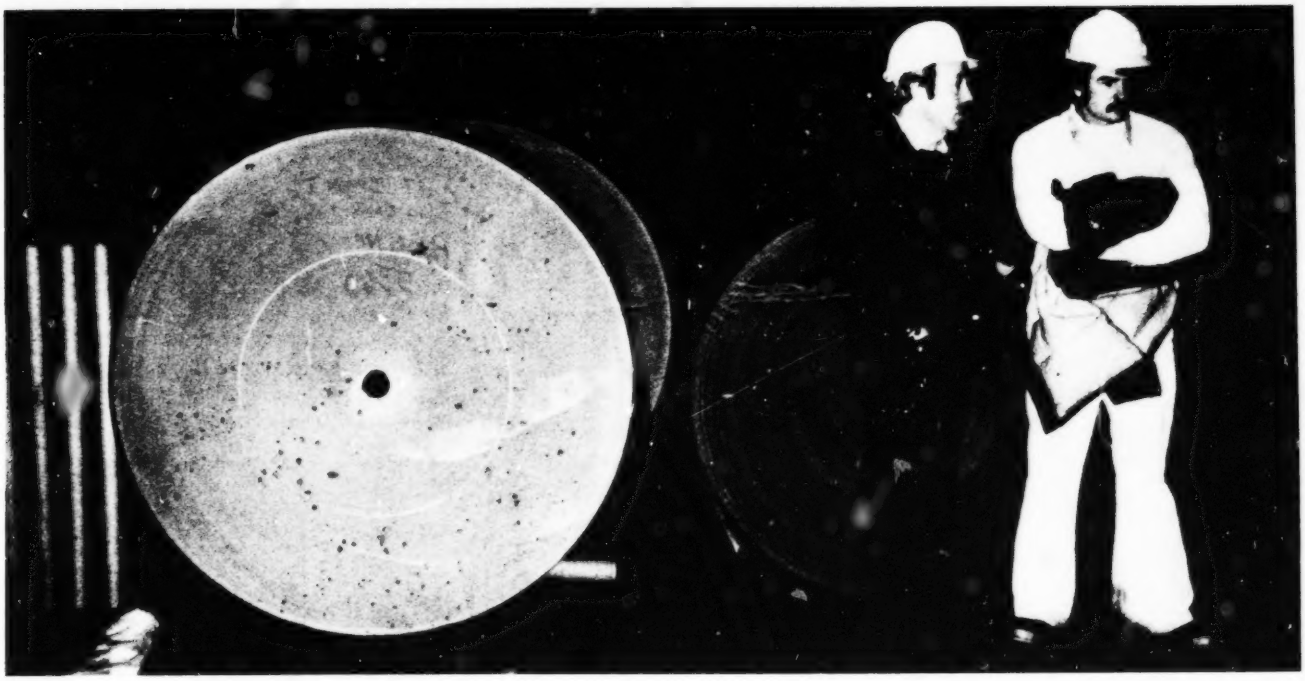
White and black spruce (*Picea glauca* (Moench) Voss and *Picea mariana* (Mill.) B.S.P.) are nearly indistinguishable in their wood structure. The wood is light colored, has low weight when dried, is soft, resilient, and straight grained, and has good machining properties. Both species are in great demand for pulp, paper, and newsprint manufacturing because of their long fibers and low resin content. The wood is also highly valued for lumber. As lumber it is used in all forms of building construction and in general millwork. Spruce is both Manitoba's and Canada's most important wood species in terms of volume harvested.



Manufacturing pallets.



House construction.



Pulp and paper produced by Manfor Ltd., The Pas.

Balsam fir (*Abies balsamea* (L.) Mill.) is similar to spruce in most physical characteristics, though fir is less resilient and has lower strength properties than spruce. Balsam fir is used for many of the purposes for which spruce is utilized. Fir is graded and marketed in the species grouping spruce-pine-fir.

Jack pine (*Pinus banksiana* Lamb.) wood is light brown in color, has medium strength and hardness characteristics, and machines and finishes well. Pine is used for pulp and paper, newsprint, lumber, and treated wood products such as railway ties, posts, and poles.

Eastern white cedar (*Thuja occidentalis* L.) seasons well without warping, has good machining qualities, and is lighter in weight than any of the other commercial species. Due to its pleasing appearance and aroma, cedar is often used for interior finishing work. Cedar is also used for exterior finishing, outdoor furniture, and posts owing to its durability and resistance to decay.

Tamarack or larch (*Larix laricina* (Du Roi) K. Koch) is not in great demand partly because of its limited availability. The wood is moderately hard and heavy, is somewhat oily, and tends to have a spiral grain that makes it undesirable for most lumber uses. Nevertheless, its strength, durability, and moderate resistance to decay makes it well suited for special purposes such as floor planking, building skids, pilings, posts, and poles.

Hardwood species

Trembling aspen (*Populus tremuloides* Michx.) commonly referred to as poplar, makes up the majority of hardwood volume available in Manitoba and is the only hardwood species used commercially to any great extent. The wood is white to grayish white in color, relatively resistant to wear, usually straight grained with a fine even texture, and comparable to spruce in strength. The wood when properly seasoned works well, holds nails satisfactorily, and takes a good finish. Due to its general availability and increased customer acceptance, the use of aspen is steadily increasing. Aspen is used for making paperboard, roofing felt, lumber, pallets, boxes, furniture stock, flooring, and fuelwood and for interior finish and trim.

Balsam poplar (*Populus balsamifera* L.), also known as poplar, is similar to trembling aspen in most wood characteristics, although balsam poplar has a coarser texture and a higher incidence of wet pockets in the wood. These drawbacks and the availability of trembling aspen have detracted from increased use of balsam poplar. Balsam poplar can be used for most products for which aspen is utilized.

White birch (*Betula papyrifera* Marsh.), green ash (*Fraxinus pennsylvanica* Marsh. var. *subintegerrima* (Vahl) Fern.), white elm (*Ulmus americana* L.), and bur oak (*Quercus macrocarpa* Michx.) are other hardwood species that have limited commercial use as furniture stock, interior finishing, flooring, and fuelwood.

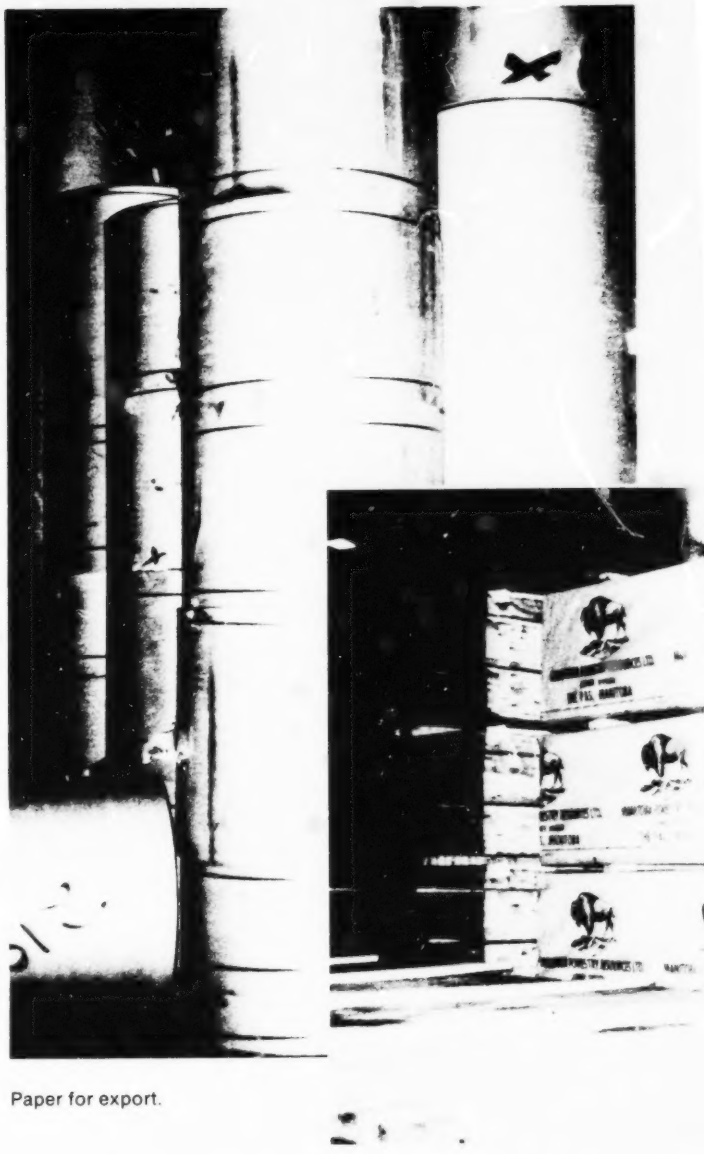
Value of shipments in the manufacturing sector

Rank by Industry[a]	Value of shipments of goods of own manufacture $000 000	%
Manitoba		
1. Food	1 489	29.6
2. Transportation equipment	422	8.4
3. Forest industry (wood industries and paper and allied industries)	384[b]	7.6
4. Primary metal products	332	6.6
5. Printing, publishing, and allied industries	316	6.3
6. Clothing	300	6.0
7. Electrical and electronic products	285	5.6
8. Metal fabricating	263	5.2
9. Chemical and chemical products	169	3.3
10. Beverage	159	3.2
Other	917	18.2
Total	5 036	100.0
Canada		
1. Transportation equipment	37 916	16.5
2. Food	31 624	13.7
3. Forest industry (wood industries and paper and allied industries)	27 444[b]	11.9
4. Petroleum and coal products	23 337	10.1
5. Chemical and chemical products	17 175	7.5
6. Primary metal products	16 431	7.1
7. Metal fabricating	12 193	5.3
8. Electrical and electronic products	11 632	5.1
9. Printing, publishing, and allied industries	8 659	3.8
10. Machinery	6 863	3.0
Other	36 796	16.0
Total	230 070	100.0

a For Manitoba, rank relates only to industry groups for which data can be published.

b These values do not include the value of shipments for the primary forestry activity (i.e., logging, SIC 0410). Since logging is a primary activity it is not included in the manufacturing sector. Incremental values of shipments for the logging industry totaled $56.1 and $5 364 million for Manitoba and Canada, respectively, in 1984-85.

Source: Statistics Canada.



Paper for export.

Wrapped lumber for shipment by rail.

Value of shipments

Value of shipments refers to the total value of sales excluding discounts, returns, allowances, sales tax, excise duties, and the cost of transporting the product to market. The value is essentially the total revenue of the goods shipped from a firm or industry. The total value of shipments of forest products in Manitoba in 1984-85 was $440 million.

Value added

In the process of creating manufactured goods, a number of intermediate goods and services are purchased by firms and are used during production.

Continued on next page

Value added continued

A few examples of intermediate goods and services in the forest industry include fuel and electricity, wood-preserving chemicals, pulp-treating chemicals, contractor fees, and lawyer and accountant fees. Without the use of these purchased intermediate goods and services, the forest product firm could not produce the form of output demanded by consumers.

Value added is defined as the difference between total revenue and the cost of all purchased materials, supplies, and services. Value added therefore includes payments to labor, depreciation, profits, and taxes.

The value added for the country as a whole is often described as its gross domestic product. The value added generated by a particular industry is a measure of that industry's contribution to a total regional, provincial, or national income.

Value added—provincial

	Manitoba	
	$000 000	%
Gross domestic product by sector[a]		
Goods producing	4 271	28.5
(Forest industry)	(221)	(1.5)
Service producing	10 724	71.5
Total	14 995	100.0
Goods producing industries		
Agriculture[b,c]	1 362	31.9
Other manufacturing	1 059	24.8
Mining[c]	646	15.1
Utilities	495	11.6
Construction	488	11.4
Forest industry[c] (forestry (logging), wood industries, and paper and allied industries)	221	5.2
Total	4 271	100.0

a Gross domestic product at factor cost, based on preliminary data.
b Includes fishing, hunting, and trapping.
c Combines primary activity and related manufacturing activity.

Source: Manitoba Bureau of Statistics.

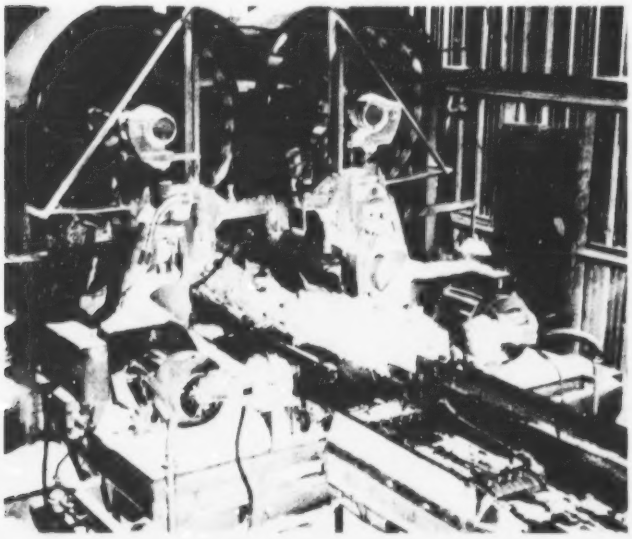
Loading lumber for export markets.

Destination of primary forest products by value

Product	Destination						Total value ($000)
	Manitoba (%)	Alberta/B.C. (%)	Saskatchewan (%)	Eastern Canada (%)	United States (%)	Abroad (%)	
Lumber (dimension, boards, and timbers)	62	2	3	3	30	0	39 258
Treated products (lumber, posts, poles, and rails)	64	0	7	8	21	0	4 743
Miscellaneous wood products (ties and house logs)	48	6	3	38	5	0	1 247
Fuelwood	100	0	0	0	0	0	4 175
Logs and pulpwood	86	0	0	12	2	0	6 956
Wood chips	97	0	0	0	3	0	8 045
Pulp and paper (newsprint, kraft paper, fiberboard sheathing, insulation, and roofing products)	13.4	4.2	3.6	17.9	58.2	2.7	156 215
Total value	30.3	3.4	3.2	14.0	47.2	1.9	220 639

Source: The Canadian Forestry Service.

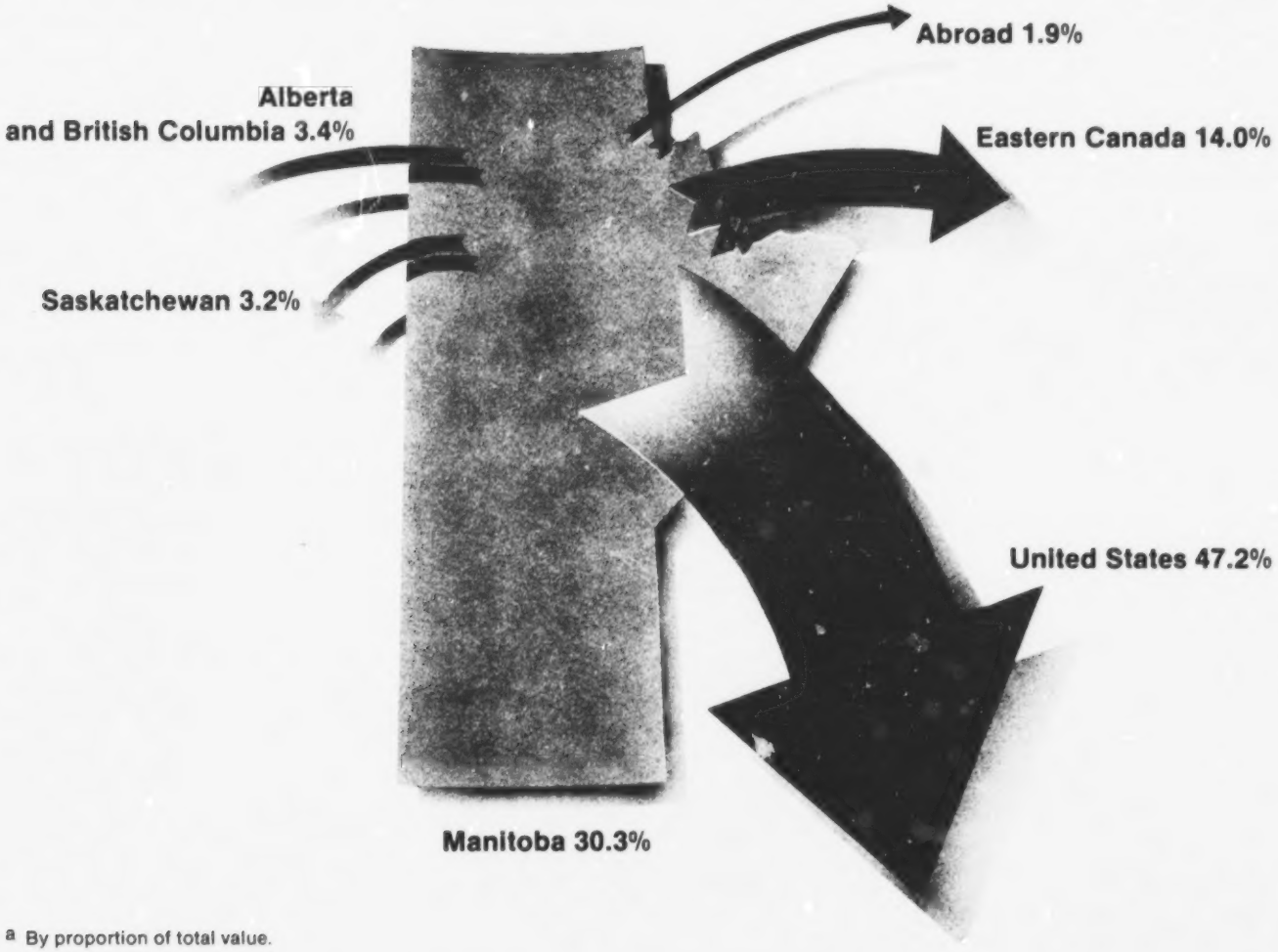
Jack pine logs destined for sawmill.



Primary log breakdown with twin band saws.

Log cants at bull edger for secondary breakdown.

Market destination of Manitoba's primary forest products[a]



[a] By proportion of total value.

Source: The Canadian Forestry Service.

Direct and indirect employment (total activity)

	No. of firms	Direct employment (Person-years)	Indirect employment (Person-years)	Total employment (Person-years)	Employment multiplier[a]
Primary industry[b]					
Sawmills					
Greater than 8115 m^3 (>5 MM fbm)	5	584	1 053	1 637	2.803
1623-8115 m^3 (1 MM to 5 MM fbm)	11	155	279	434	2.803
162-1623 m^3 (100 M to 1 MM fbm)	35	199	359	558	2.803
Less than 162 m^3 (<100 M fbm)	102	17	31	48	2.803
Independent planing mills	5	75	135	210	2.803
Wood treating	2	38	35	73	1.912
Miscellaneous wood-using industries (building timbers, posts, and poles)	12	76	69	145	1.912
Pulp, paper, and fiberboard mills	4	1 560	3 521	5 081	3.257
Independent log producers	N/A	144	61	205	1.424
Total		2 848	5 543	8 391	2.946
Secondary industry[c]					
Sash, door, and other millwork industries (SIC[d] 254)	67	1 407[e]	781	2 188	1.555
Wooden box and pallet industry (SIC 256)	5	79	42	121	1.530
Coffin and casket industry (SIC 258)	2	21[e]	10	31	1.467
Paper box and bag industries (SIC 273)	10	649[e]	476	1 125	1.734
Other converted paper products industries (SIC 279)	9	216[e]	154	370	1.713
Total		2 372	1 463	3 835	1.617
All forest industry		5 220	7 006	12 226	2.342

a The multipliers used in this table are derived from the Manitoa Bureau of Statistics and are presented as weighted averages to reflect the forest industry classification system used in this report.
b Primary industry statistics are from the Canadian Forestry Service.
c Secondary industry statistics are from Statistics Canada.
d Standard Industrial Classification.
e Estimate.

Sources: The Canadian Forestry Service and Statistics Canada.

Employment multiplier

An employment multiplier is a value that when multiplied by the direct employment of a given industry indicates the total direct and indirect employment generated by that industry. Indirect employment results from basic (i.e., export oriented) manufacturing activities.

In the forest industry, direct employment includes all persons directly employed in logging and the processing plants. Indirect employment includes all persons employed as an indirect result of forest industry activity, for example, sales personnel in local retail outlets, those employed in supplying the forestry complex with intermediate goods, and government employees required to maintain community services.

Continued on next page

Feller-buncher—a tree harvester.

Employment multiplier continued

In Manitoba, one job in 38 is directly or indirectly dependent on the forest industry.

Salaries and wages

Rank by manufacturing industry[a]	Salaries and wages for total activity $000 000	%
Manitoba		
1. Food	191	17.5
2. Transportation equipment	131	12.0
3. Printing, publishing, and allied industries	102	9.3
4. Clothing	94	8.6
5. Forest industry (wood industries and paper and allied industries)	83[b]	7.6
6. Metal fabricating	81	7.4
7. Electrical and electronic products	71	6.5
8. Primary metal	60	5.5
9. Beverage	32	2.9
10. Furniture and fixtures	30	2.7
Other	219	20.0
Total	1 094	100.0
Canada		
1. Forest industry (wood industries and paper and allied industries	6 057[b]	14.1
2. Transportation equipment	5 663	13.2
3. Food	4 170	9.7
4. Primary metal	3 598	8.4
5. Electrical and electronic products	3 368	7.8
6. Metal fabricating	3 114	7.2
7. Printing, publishing, and allied industries	2 761	6.4
8. Chemical and chemical products	2 614	6.1
9. Machinery	1 809	4.2
10. Clothing	1 595	3.7
Other	8 327	19.2
Total	43 076	100.0

[a] For Manitoba, rank relates only to industry groups for which data can be published.

[b] These values do not include the salaries and wages paid for the primary forestry activity (i.e., logging, SIC 0410). Since logging is a primary activity it is not included in the manufacturing sector. Incremental salaries and wages paid in the logging industry totaled $13.9 and $1 324.2 million for Manitoba and Canada, respectively, in 1984-85.

Source: Statistics Canada.

Corporate and personal income taxes from the forest industry[a]

Tax	Estimated taxes paid Manitoba ($000 000)	Canada ($000 000)
Corporate income		
Provincial	0.5	98.1
Federal	2.2	130.0
Personal income		
Provincial	5.0	425.0
Federal	9.3	849.0

[a] Forest industry includes forestry (logging), wood industries, and paper and allied industries.

Sources: Statistics Canada and the Canadian Forestry Service.

Taxes

The table to the left presents only income taxes paid by the forest industry in Manitoba. Other taxes include sales tax; corporation capital tax; excise taxes on materials, supplies, and building and construction materials; and tax on gasoline and motive fuels. In total, approximately $27 million in taxes were collected from forestry firms and their employees in 1984. About 54% of the revenues accrued to the federal government and 46% accrued to the provincial government. The above total does not include fees and royalties received by the provincial government for timber acquisition, nor was any attempt made to estimate municipal property taxes.

Uses of forest land

The table on the following page quantifies only a few of the nontimber uses of forest land (most uses are not readily measurable). Such uses are vital to many activities, including

Continued on next page

Clear Lake, Riding Mountain National Park.

Fishing for lake trout in Manitoba's northern lakes.

Manitoba's forests—a multiple use resource

Fish	
Angling licenses—'000	188
Estimated revenue—$000	1 327
Estimated recreation days—'000	2 700
Commercial fish catch—'000 kg	13 951
Estimated market value—$000	36 491
Game	
Hunting licenses—'000	98
Estimated revenue—$000	2 034
Estimated recreation days—'000	739
Trapping	
Trapper licenses—'000	16
Estimated value of harvest—$000	4 764
Outdoor recreation[a]	
Visitors—'000	6 106
Campers in parks—'000	991
Estimated park permit revenue—$000	2 739
Watershed benefits	
Net mean annual yield[b] in river discharges —'000 000 m^3	20 680

[a] Provincial parks and other recreational areas and national parks, 1984-85.

[b] Difference between outflow and inflow river discharges, with the majority of water being produced in a forested area.

Sources: Manitoba Natural Resources, Parks Canada, and the Canadian Forestry Service.

Uses of forest land continued

the tourist and recreation industries. As these industries grow, the multiple use demand on forested land will increase. Forests are a generous endowment held in trust by the people of Manitoba for the continued use and enjoyment of future generations.

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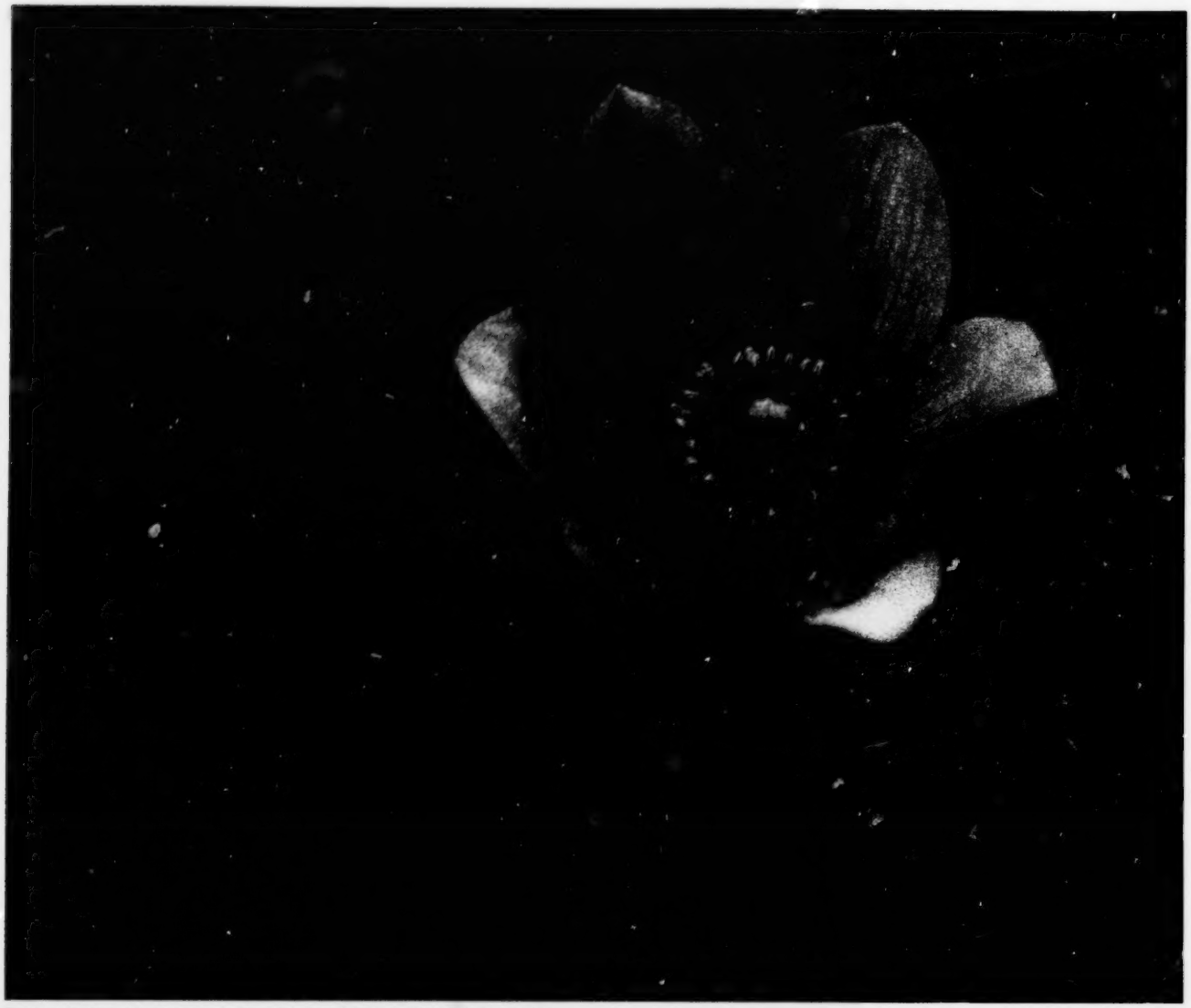

Prairie crocus (*Anemone patens* L.), the floral emblem of Manitoba.

Credits

The Canadian Forestry Service gratefully acknowledges the cooperation of the forest industry in Manitoba and its participation in the survey that provided some of the information reported here.

Detailed results of the forest industry survey are available in the *Directory of primary wood-using industries in Manitoba—1985* published by the Canada—Manitoba Forest Renewal Agreement.

This Forestry Report was prepared by R.A. Bohning of the Forest Economics Group, Regional Development, Northern Forestry Centre.

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